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Case Report

Horner syndrome due to right subclavian artery dissection: Case report☆,☆☆

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ABSTRACT

This is a novel case of spontaneous subclavian artery dissection presenting with an asymptomatic right Horner Syndrome, highlighting both the importance of carefully evaluating the pupils on comprehensive exam, and also the subclavian arteries when assessing for the cause of Horner Syndrome. This original case serves as a caution for practitioners not to overlook the subclavian arteries in the search for the cause of Horner Syndrome. While rare, spontaneous subclavian artery dissection can occur, and carries a risk of morbidity and mortality that must be mitigated. We present a case of asymptomatic, atraumatic right Horner Syndrome where a spontaneous right subclavian artery dissection was found to be the source. It was managed with aspirin therapy and the patient has not suffered any subsequent cardiovascular events related to the dissection. Careful angiographic evaluation of the subclavian arteries should be included in the workup for Horner Syndrome to assess for subclavian artery dissection.

Introduction

Horner Syndrome classically presents with ptosis, miosis and anhidrosis caused by disruption of the ipsilateral sympathetic nerve chain. It is often a result of trauma, lesions of- or around the hypothalamus, mediastinal masses involving the superior sulcus, or carotid artery dissection.

Subclavian artery dissection is a rarely reported entity. Subclavian artery dissection is typically associated with congenital anomalies of the aortic arch, connective tissue disorders, catheterization or trauma; outside of these circumstances, minimally traumatic or spontaneous subclavian artery dissection has only occasionally been reported [1–11]. Nearly all of these presented with pain, infarctions, ischemic,- and/or other symptoms; only one, caused by significant aortic dis-

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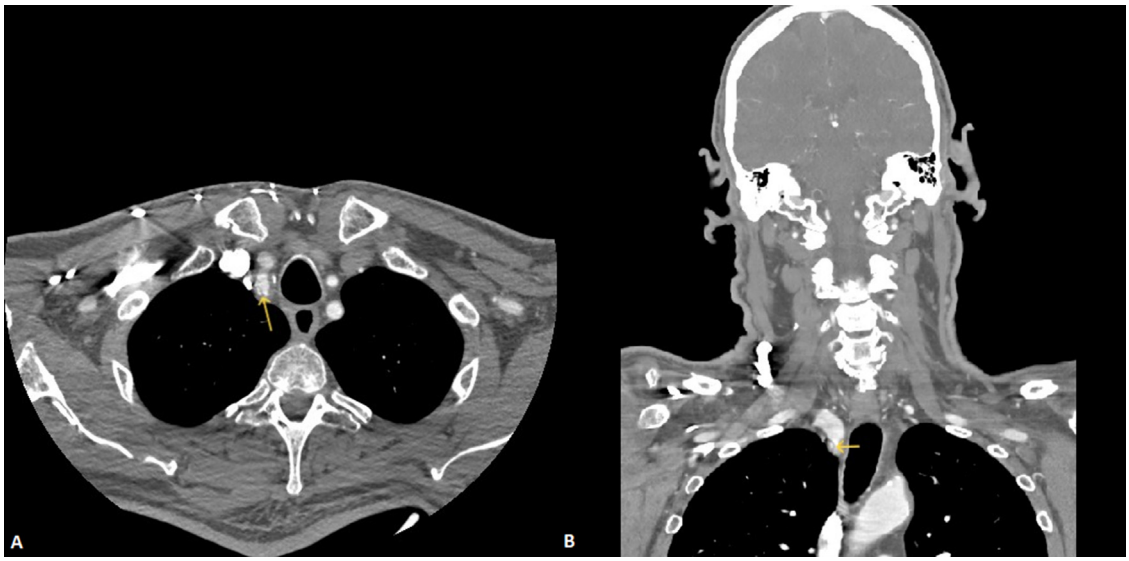

Fig. 1 – Computed Tomography Angiography axial (A) and coronal (B) images showing a small lateral curvilinear filling defect (arrows) consistent with a nonocclusive dissection flap of the right subclavian artery.

section extending to-/including both subclavian arteries, included Horner Syndrome [12].

Here, we report a novel, asymptomatic spontaneous subclavian artery dissection presenting with Horner Syndrome.

Case

A 71-year-old male presented for a comprehensive eye exam, with complaints only related to his known cataracts. His medical history included type II diabetes, hypertension, hyperlipidemia, basal cell carcinoma of the scalp status post reconstructive surgery, coronary artery disease with a non-ST elevation myocardial infarction status post 3 vessel coronary artery bypass graft and mitral annuloplasty 18 months prior, asymptomatic internal carotid artery stenosis (right 50%-69%, left 70%-99%), anxiety, and sciatica. His chronic medications were aspirin, atorvastatin, carvedilol, empagliflozin, sacubitril, sertraline, spironolactone, and he was on a short course of prednisone.

He was found to have new anisocoria, left eye pupil larger than right, with anisocoria that was relatively greater in dim illumination. There was no relative afferent pupillary defect. He had 2 mm of relative right upper eyelid ptosis (right: marginal reflex distance 1 (MRD1) of 4 mm, left: MRD1 of 6 mm). The balance of his eye exam was unremarkable. Apraclonadine 1% testing did not reverse anisocoria *but did improve the right upper eyelid ptosis by 1 mm, while the left upper eyelid position remained unchanged*; the exam was clinically consistent with right Horner Syndrome. Exam otherwise was unremarkable and noncontributory.

He denied any injuries or surgeries involving his head, neck, or upper chest aside from the coronary artery bypass graft and mitral annuloplasty 18 months prior. He denied any pain, neurologic or ischemic symptoms, falls, or chiropractic care. His most recent hemoglobin A1c was 5.9% 6 months prior, and his hypertension had been controlled with readings <140/<80. He had an approximately 27 pack year smoking history.

Computed tomography imaging of head, neck, and chest were negative, but computed tomography angiography of the head and neck indicated a small lateral linear filling defect consistent with a nonocclusive dissection flap of the right subclavian artery (Fig. 1), explaining the right Horner Syndrome. This has been treated with aspirin; the patient has remained asymptomatic and has had no subsequent cardiovascular events.

Discussion

Horner Syndrome is often found on comprehensive ophthalmologic exam, and may present acutely or incidentally, with or without pain or precipitating factors. The 3-nerve sympathetic chain traverses a physically long distance from its origin in the hypothalamus to the lung apex and back to the eye, and any number of abnormalities along this course may lead to an ipsilateral Horner Syndrome. Because of the disrupted sympathetic innervation to smooth muscles of the ipsilateral eyelid and the pupil dilator, Horner Syndrome presents with a mild upper eyelid ptosis and a miotic pupil where the resultant anisocoria is relatively greater in dim illumination than bright illumination. Apraclonidine, an alpha-2 adrenergic agonist, will often yield reversal of anisocoria in longer-standing Horner Syndrome due to denervation hypersensitivity of the affected pupillary dilator, but will be negative in acute Horner Syndrome.

Iatrogenic Horner Syndrome may occur, such as after carotid stenting, subclavian flap aortoplasty, tunneled central venous catheter placement, infraclavicular, or subclavian region perivascular anesthetic use, lower cervical paraspinal procedures, or upper thoracotomies for various cardiothoracic procedures, among others [13–16].

Abnormalities of the subclavian artery itself are occasionally implicated for Horner Syndrome, perhaps more so in congenital cases, but rarely in acquired Horner Syndrome. Subclavian artery aneurysms- or pseudoaneurysms occasionally have been reported to cause Horner Syndrome [17–19].

Subclavian artery dissection itself is infrequent, while spontaneous subclavian artery dissection is quite rare. Spontaneous subclavian artery dissection causing Horner Syndrome has not previously been reported. Risks associated with subclavian artery dissection include bleeding, thrombosis or emboli affecting the head, neck or ipsilateral upper extremity. Once discovered, subclavian artery dissection carries a favorable prognosis and is generally managed conservatively with anticoagulation and/or antiplatelet therapy, and control of hypertension to prevent dissection extension, though may be managed with endovascular repair [1,3,20].

Conclusions

Careful evaluation of pupil size in light and dim illumination should be included in all comprehensive eye exams, as even asymptomatic patients may have Horner Syndrome, whose underlying cause could be life-threatening. While unlikely, subclavian artery dissection carries significant risk of morbidity or mortality, so vascular imaging (computed tomography angiography or magnetic resonance imaging angiography) of the head and neck when evaluating Horner Syndrome should include the upper chest to capture the entirety of the course of the sympathetic chain, with careful evaluation of the subclavian arteries, as well, to rule out subclavian artery pathology such as dissection as the cause of Horner Syndrome.

Patient consent

No identifiable health information was included in this case report. Written, informed consent for use of data and images was obtained from the patient; this signed consent is retained in the patient's medical record.

CRediT authorship contribution statement

Sara L. Weidmayer: Writing – original draft, Writing – review & editing. **Eric A. Liao:** Writing – review & editing.

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